

# An Organotypic Model of Traumatic Brain Injury

Aim: *In vitro* TBI model:

- a) deliver defined, scalable mechanical insult
- b) characterize biological injury cascade.

Engineering

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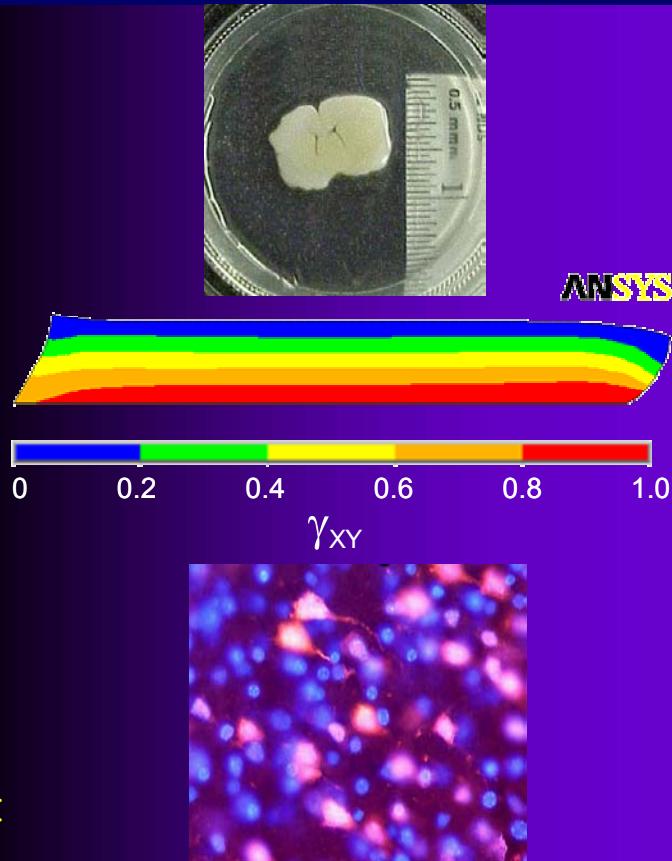
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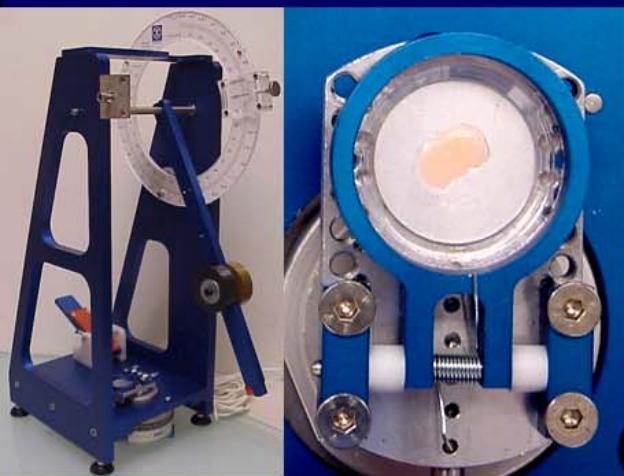
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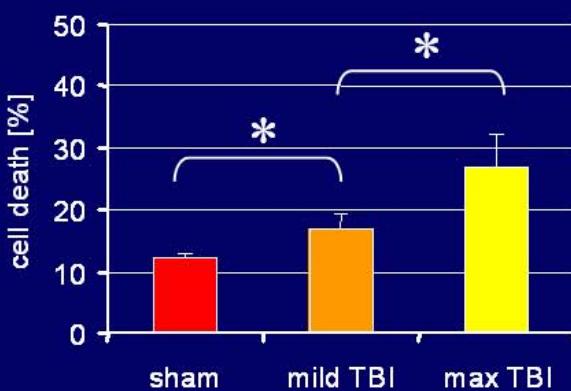
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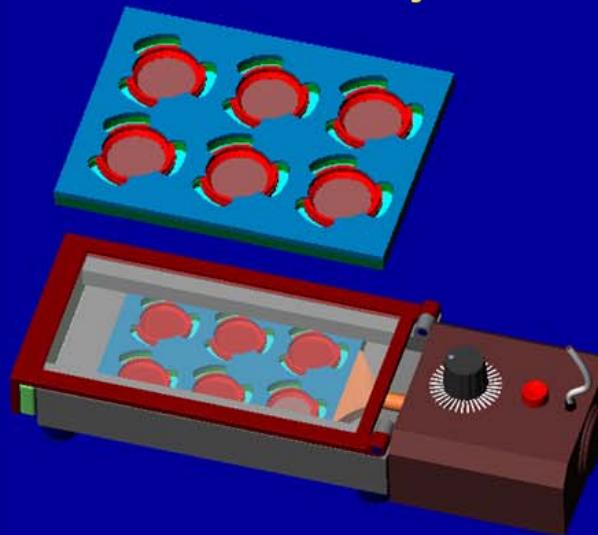
## 1<sup>st</sup> Generation Model



- Hole brain slice culture
- Shear by rotational acc.
- Single well system
- Modest scalability



## 2<sup>nd</sup> Gen TBI System



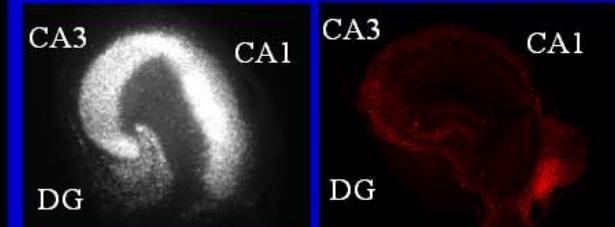
- Hippocampal slice culture
- Shear by linear acc.
- ↑ throughput / user friendly
- ↑ scalability
- ↑ reproducibility



## Model Application

### Analysis:

- Death: LDH, PI, Western Blot
- Function: Ca Imaging, fEPSP, long-term potentiation



### Aims:

- Injury pathway
- apoptotic / necrotic
- time-history / threshold
- mild TBI + OGD
- intervention

